



(19)

Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 756 855 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
02.11.2000 Bulletin 2000/44

(51) Int Cl.7: **A61F 13/58**

(21) Application number: **96305696.5**

(22) Date of filing: **01.08.1996**

(54) Disposable diaper having fastening means

Wegwerfwindel mit Verschluss

Couche à jeter pourvue de moyens de fixation

(84) Designated Contracting States:
BE DE FR GB IT NL SE

• Fujioka, Yoshihisa
Mitoyo-gun, Kagawa-ken (JP)

(30) Priority: **02.08.1995 JP 19773195**

(74) Representative:
Murgatroyd, Susan Elizabeth et al
Baron & Warren
18 South End
Kensington
London W8 5BU (GB)

(43) Date of publication of application:
05.02.1997 Bulletin 1997/06

(56) References cited:
EP-A- 0 491 347 EP-A- 0 532 805
WO-A-92/01759 US-A- 4 662 875
US-A- 4 810 574

(73) Proprietor: **UNI-CHARM CORPORATION**
Kawanoe-shi Ehime-ken (JP)

(72) Inventors:
• Kido, Tsutomu
Kawanoe-shi, Ehime-ken (JP)

EP 0 756 855 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] The present invention relates to a disposable diaper having fastening means for connecting a front waist and a rear waist of the diaper to each other.

[0002] Japanese Laid-Open Utility Model Application No. Hei7-22725 discloses a disposable diaper having tape fasteners extending outward from transversely opposite side edges of a rear region of the diaper and adapted to be releasably fastened to receiving sheets bonded to an outer surface of a front region of the diaper, wherein graduations are marked on the receiving sheets circumferentially around the waist of the diaper. These graduations serve as a positioning indicator when the tape fasteners are fastened to the receiving sheets so that these graduations may be utilized to maintain a constant degree of tightening force around a wearer's waist.

[0003] The receiving sheets are generally made of a plastic film or nonwoven fabric and the graduations are printed on surfaces of these receiving sheets. Particularly in the case of a baby's diaper, materials used for the diaper should be carefully selected from the viewpoint of sanitary security, since babies often put their fingers or various other things into their mouths. While hygienically innocuous ink is used for printing the graduations, it is desired to avoid that the ink might be in contact with a baby's mouth.

[0004] A further diaper fastening system is known from EP-A-0 532 805, in which a receiving sheet is made from a hot-melt resin composite provided on a substrate layer, and whereby said resin may be applied in a visible pattern.

[0005] Accordingly, it is a principal object of the invention to eliminate a need for printing the graduations and to prevent regions occupied by the receiving sheets from becoming unacceptably rigid by utilizing a pattern in which an adhesive for bonding the receiving sheets to the front region is applied as the graduations.

[0006] Accordingly, the present invention consists in a disposable diaper having fastening means comprising tape fasteners and a receiving sheet, said tape fasteners extending outward from transversely opposite side edges of a rear region of the diaper, and said receiving sheet being bonded by means of adhesive to an outer surface of a front region of the diaper so that said tape fasteners may be releasably fastened to said receiving sheet, characterised in that said adhesive is intermittently disposed circumferentially around a waist region of said diaper, said receiving sheet and said adhesive have relatively different colors, and said receiving sheet has a light transmissivity allowing the color of said adhesive to be seen through said receiving sheet.

[0007] The invention will now be described by way of example with reference to the accompanying drawings, wherein:-

Fig. 1 is a perspective view, partially broken away, of a disposable diaper in accordance with one em-

bodiment of the invention as put on a wearer's body;

Fig. 2 is a plan view of a tape fastener;

Fig. 3 is a sectional view taken along a line III-III in Fig. 2; and

Fig. 4 is a sectional view taken along a line IV-IV in Fig. 1.

[0008] Fig. 1 is a partially broken away perspective view showing a diaper 1 as put on a user's body. As shown, the diaper 1 comprises a liquid-permeable top-sheet 2, a liquid-impermeable backsheet 3 and a liquid-absorbent core 4 disposed between these two sheets 2, 3. The diaper 1 has a front region 5, a rear region 6 and a crotch region 7 longitudinally extending between these two regions 5, 6. Tape fasteners 10 laterally extend outward from transversely opposite edges 6A of the rear region 6, respectively, and are adapted to be releasably fastened to the front region 5 by engaging respective inner surfaces of these fasteners 10 with the receiving sheets 11 provided on an outer surface of the front region 5 at its transversely opposite edges. The diaper 1 is formed with a waist-opening 12 and a pair of leg-openings 13 when the front and rear regions 5, 6 are connected by means of the tape fasteners 10 to each other in such a manner as described just above. The respective openings 12, 13 are circumferentially provided with elastically stretchable members 15, 16, respectively, which are bonded to at least one of respective inner surfaces of the top-and backsheets 2, 3.

[0009] The tape fastener 10 of which the inner side is shown in Fig. 2 comprises a soft sheet member 20 formed of a nonwoven fabric made of thermoplastic synthetic fibers and fastening members 21 made of a plastic material having a rigidity higher than that of the sheet member 20. The fastening members 21 extend between upper and lower edges 20A, 20B of the sheet member 20 at locations spaced from each other, i.e., at a location adjacent a base end 20C and at a location adjacent a free end 20D with respect to the associated edge of the rear region 6 from which the tape fastener 10 laterally extends outward, and are fixedly bonded to the sheet member 20 by means of an adhesive agent 22A and heat-sealing spots 26. The sheet member 20 is provided between the two fastening members 21 with an adhesive region 22 carrying the adhesive agent 22A exposed thereon. The free end 20D of the sheet member 20 is non-adhesive and serves as pick-up means.

[0010] Fig. 3 is a sectional view taken along a line III-III in Fig. 2. As shown, a part of the sheet member 20 is bonded to respective inner surfaces of the top-and backsheets 2, 3 by means of hot melt adhesive 27. The paired fastening members 21 spaced from each other are bonded to an upper surface of the adhesive agent 22 and heat-sealed to the sheet member 20 by means of the heat-sealing spots 26. Each fastening member 21

corresponds to a plurality of hook elements of so-called surface fastener well known by the trade name of Velcro or Magic Tape and made of nylon or other plastics. Each receiving sheet 11 to which the respective fastening members 21 are fastened comprises a bulky nonwoven fabric made of crimped fibers. The receiving sheet 11 has a color different from that of adhesive 30 as will be described later and a light transmissivity allowing the color of the adhesive 30 to be seen therethrough. The receiving sheet 11 corresponds to a plurality of loop elements of said surface fastener. The receiving sheet 11 has a plurality of vertically extending stripes as seen in Fig. 1 so that each of these stripes may be used as a positioning indicator when the fastening members 21 are engaged with the respective receiving sheets 11.

[0011] As will be apparent from Fig. 4 which is a sectional view taken along a line IV-IV in Fig. 1, the striped pattern is obtained by bonding the receiving sheet 11 to the backsheet 3 with use of colored hot melt adhesive 30 wherein the nonwoven fabric is applied with the colored hot melt adhesive 30 in the desired striped pattern. Referring to Fig. 4, sections 28A are bonded to the backsheet 3 and present a color of the hot melt adhesive therethrough while sections 28B are not bonded to the backsheet 3 and present a color of the receiving sheet itself. The pattern in which the receiving sheet 11 is applied with the hot melt adhesive and which serves as the positioning indicator may be selected from a group of appropriate patterns other than the striped pattern as adopted by the illustrated embodiment, so far as the adhesive is applied to the receiving sheet 11 intermittently along the waist line. Such Intermittent application of adhesive may be performed over a limited extent predetermined for fastening of the member 21 and a peripheral region of the nonwoven fabric extending outside such predetermined extent may be, for example, continuously bonded to the backsheet 3. The pattern in which the adhesive 30 is applied and the shape of the sheet member 20 are preferably symmetric with respect to a transversely center line (not shown) of the diaper 1. To enhance the function of the adhesive application pattern as the indicator, the respective stripes may have widths progressively changing in the circumferential direction.

[0012] To implement the invention, a soft plastic film may be employed rather than the nonwoven fabric as a material for the sheet member 20 and an adhesive tape fastener may be employed rather than the fastening tape 21 as the tape fastener 10. The receiving sheet 11 associated with the adhesive tape fastener 10 is preferably made of a plastic film which must, obviously, allow the color of the hot melt adhesive to be seen therethrough. The receiving sheets 11 for both side edges of the front region 5 in the illustrated embodiment may be replaced by a single sheet which is continuous circumferentially around a wearer's waist. It should be understood that not only the adhesive agent such as hot melt adhesive but also a heat-sealing technique may be em-

ployed for bonding of the respective members, the latter being useful for the members made of a heat-sealable material.

[0013] In the diaper according to the invention, the receiving sheets to which the tape fasteners are fastened are intermittently bonded to the outer surface of the backsheet and the bonded regions thereof can be seen through the receiving sheets so as to serve as the positioning graduations when the tape fasteners are fastened to the respective receiving sheets. The adhesive used for such bonding is covered with the receiving sheets and therefore reliably prevented from being in contact with a baby's hands and mouth, assuring sanitary security of this diaper. According to the Invention, application of the adhesive makes printing of the graduations unnecessary and correspondingly allows the manufacturing cost to be reduced. Non-bonded regions generated from intermittent application of the adhesive do not affect air-permeability of the backsheet and thus significantly improve the air-permeability of the diaper as a whole over the conventional case in which such receiving sheets are bonded over the entire area thereof to the backsheet. Intermittent application of the adhesive is advantageous also in that the regions occupied by the receiving sheets do not cause unacceptably high rigidity and this advantageous effect is particularly evident when the receiving sheets are made of a nonwoven fabric.

30 Claims

1. A disposable diaper (1) having fastening means comprising tape fasteners (10) and a receiving sheet (11), said tape fasteners (10) extending outward from transversely opposite side edges of a rear region (6) of the diaper (1), and said receiving sheet (11) being bonded by means of adhesive (30) to an outer surface of a front region (5) so that said tape fasteners (10) may be releasably fastened to said receiving sheet (11), characterised in that said adhesive (30) is intermittently disposed circumferentially around a waist region of said diaper (1), said receiving sheet (11) and said adhesive (30) have relatively different colors, and said receiving sheet (11) has a light transmissivity allowing the color of said adhesive (30) to be seen through said receiving sheet (11).
2. The disposable diaper as claimed in Claim 1, wherein said adhesive (30) is disposed so as to form a pattern comprising a plurality of stripes extending vertically of the diaper (1).
3. The disposable diaper as claimed in Claim 2, wherein said pattern of stripes are formed symmetrically with respect to a center line transversely dividing said diaper (1) in two halves.

4. The disposable diaper as claimed in Claim 1, 2 or 3, wherein each of said tape fasteners (10) comprises a plurality of hook elements (21). 5
5. The disposable diaper as claimed in Claim 4, wherein said receiving sheet (11) comprises a plurality of loop elements. 5
6. The disposable diaper as claimed in Claim 1, 2 or 3, wherein each of said tape fasteners (10) is made of adhesive tapes. 10
7. The disposable diaper as claimed in Claim 6, wherein said receiving sheet (11) is made of a plastic film. 15

Patentansprüche

1. Wegwerwindel (1) mit Befestigungsmitteln, umfassend Klebebandbefestigungsmittel (10) und eine aufnehmende Lage (11), wobei sich die Klebebandbefestigungsmittel (10) von den sich quer gegenüberliegenden Seitenkanten einer hinteren Region (6) der Windel nach außen erstrecken, und wobei die aufnehmende Lage (11) mit Hilfe von Klebstoff (30) an eine äußere Fläche einer vorderen Region (5) angeklebt ist, so dass die Klebebandbefestigungsmittel (10) an der aufnehmenden Lage (11) lösbar befestigt werden können, dadurch gekennzeichnet, dass der Klebstoff (30) abstandsweise rund um eine Taille der Windel (1) angeordnet ist, dass die aufnehmende Lage (11) und der Klebstoff (30) relativ unterschiedliche Farben besitzen, und die aufnehmende Lage (11) eine Lichtdurchlässigkeit aufweist, welche die Sichtbarkeit der Farbe des Klebstoffs (30) durch die aufnehmende Lage (11) hindurch erlaubt. 20
2. Wegwerwindel nach Anspruch 1, wobei der Klebstoff (30) so angeordnet ist, dass er ein Muster bildet, welches eine Vielzahl an Streifen umfasst, die sich vertikal über die Windel (1) erstrecken. 25
3. Wegwerwindel nach Anspruch 2, wobei das Streifenmuster in Bezug auf eine Mittellinie, welche die Windel (1) quer in zwei Hälften teilt, symmetrisch ausgebildet ist. 30
4. Wegwerwindel nach Anspruch 1, 2 oder 3, wobei jedes der Klebebandbefestigungsmittel (10) eine Vielzahl an Hakenelementen (21) umfasst. 35
5. Wegwerwindel nach Anspruch 4, wobei die aufnehmende Lage (11) eine Vielzahl an Schleifenelementen umfasst. 40
6. Wegwerwindel nach Anspruch 1, 2 oder 3, wobei jedes der Klebebandbefestigungsmittel (10) aus Klebeband hergestellt ist. 45
7. Wegwerwindel nach Anspruch 6, wobei die aufnehmende Lage (11) aus Plastikfolie hergestellt ist. 50

Revendications

1. Couche jetable (1) ayant des moyens de fixation comprenant des bandes de fixation (10) et une feuille de réception (11), lesdites bandes de fixation (10) s'étendant vers l'extérieur à partir des bords latéraux opposés transversalement d'une zone arrière (6) de la couche (1), et ladite feuille de réception (11) étant liée aux moyens d'adhésifs (30) à une surface externe d'une zone avant (5) de telle sorte que lesdites bandes de fixation (10) peuvent être fixées de manière amovible à ladite feuille de réception (11), caractérisé en ce que ledit adhésif (30) est disposé de manière intermittente circonférentiellement autour d'une zone de ceinture de ladite couche (1), ladite feuille de réception (11) et ledit adhésif (30) ayant des couleurs relativement différentes et ladite feuille de réception (11) ayant une transparence à la lumière permettant à la couleur dudit adhésif (30) d'être vue à travers ladite feuille de réception (11). 55
2. Couche jetable selon la revendication 1, dans laquelle ledit adhésif (30) est disposé de manière à former un motif comprenant une pluralité de bandes s'étendant verticalement par rapport à la couche (1). 60
3. Couche jetable selon la revendication 2, dans laquelle ledit motif de bande est formé symétriquement par rapport à une ligne centrale divisant transversalement ladite couche (1) en deux moitiés. 65
4. Couche jetable selon les revendications 1, 2 ou 3, dans laquelle chacune des bandes de fixation (10) comprend une pluralité d'éléments de crochet (21). 70
5. Couche jetable selon la revendication 4, dans laquelle ladite feuille de réception (11) comprend une pluralité d'éléments de boucle. 75
6. Couche jetable selon les revendications 1, 2 ou 3, dans laquelle chacune desdites bandes de fixation (10) est réalisée en bande adhésive. 80
7. Couche jetable selon la revendication 6, dans laquelle ladite feuille de réception (11) est réalisée en un film plastique. 85

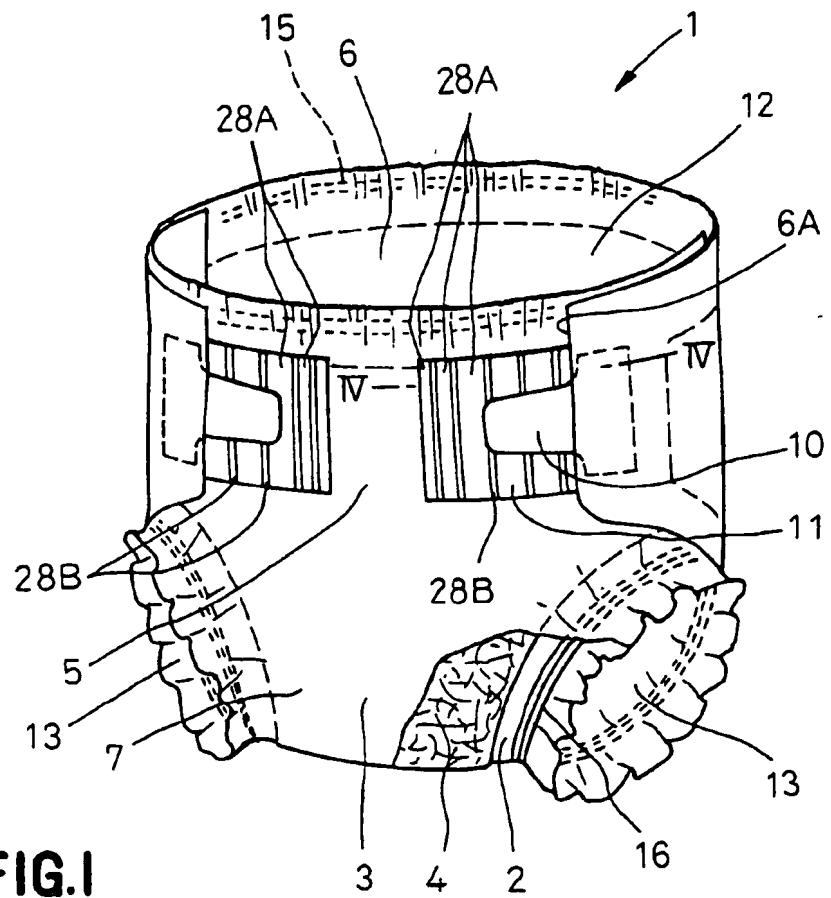


FIG.1

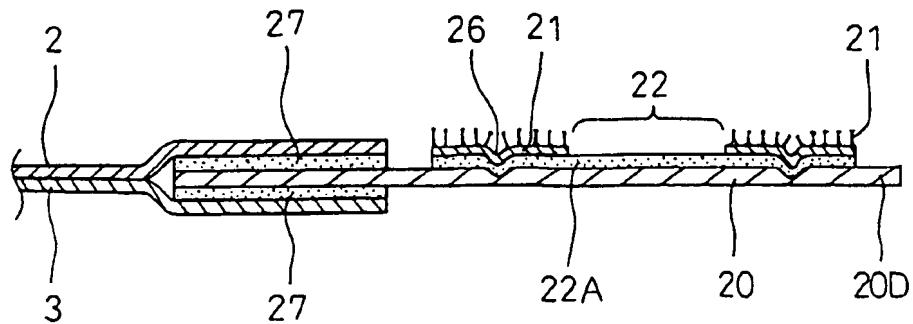


FIG.3

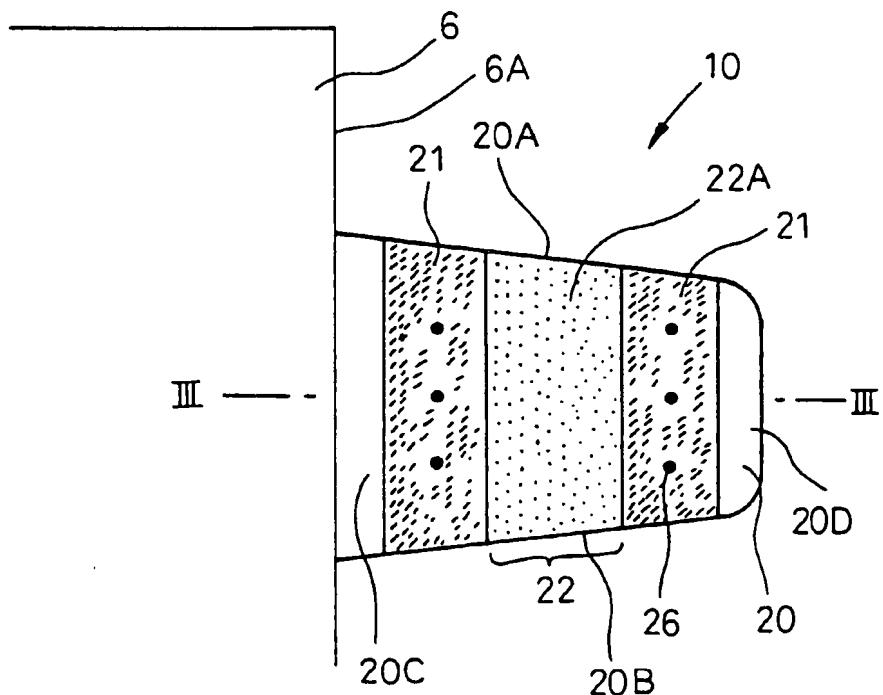


FIG.2

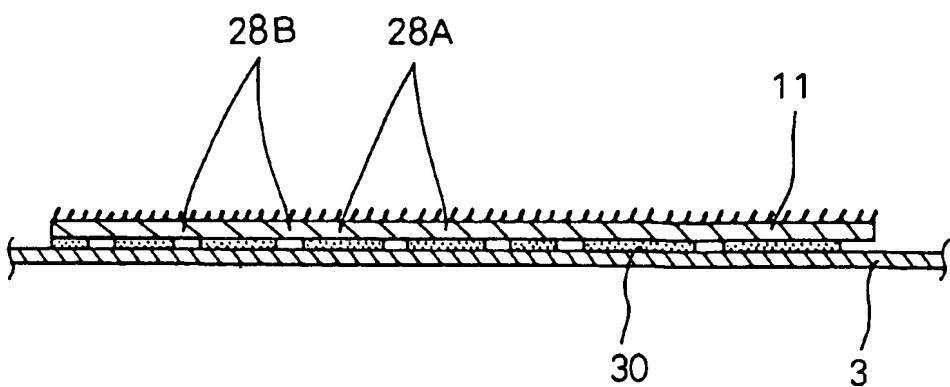


FIG.4